

AMENDMENTS TO THE CLAIMS:

1. (Currently Amended) A continuous process ~~for the conversion of a solid starting iron compound selected from the group consisting of iron oxides, iron hydroxides, iron oxyhydroxides, and mixtures thereof into a solid product iron compound, the solid product iron compound having different physical, chemical, and/or structural properties from the solid starting iron compound, which process comprises~~ comprising the steps of:

a) ~~dispersing the solid starting iron compound in a liquid thus forming a suspension, and~~

forming a suspension by dispersing a solid starting iron compound in a liquid;

b) continuously feeding the suspension ~~continuously though~~ through one or more agitated conversion vessels ~~vessel(s), in which vessel(s) the solid starting iron compound is converted into the solid product iron compound~~ under hydrothermal conditions;

converting the solid starting iron compound into a solid product iron compound, having different physical, chemical, or structural properties from the solid starting iron compound, in the one or more agitated conversion vessels; and

continuously removing the solid product iron compound from the last of the one or more conversion vessels.

Claims 2 - 17 (Cancelled)

18. (New) The process of claim 1, wherein the solid starting iron compound is selected from the group consisting of iron oxides, iron hydroxides, iron oxyhydroxides, and mixtures thereof.

19. (New) The process of claim 1, wherein an additive-containing solid starting iron compound is used.

20. (New) The process of claim 18, wherein the solid starting iron compound is an iron ore, a synthetic iron product, or a precipitated iron salt.

21. (New) The process of claim 20, wherein the solid starting iron compound is an iron ore selected from the group consisting of goethite, akaganeite, bernalite, ferrosynite, ferrihydrite, lepidocrocite, limonite, maghemite, magnetite, hematite, and wustite.
22. (New) The process of claim 1, wherein the one or more agitated conversion vessels is a plug flow reactor having an static mixer.
23. (New) The process of claim 1, wherein the one or more agitated conversion vessels is a continuously stirred tank reactor.
24. (New) The process of claim 1, wherein the suspension flows substantially upward through the one or more conversion vessels.
25. (New) The process of claim 1, wherein from two to five conversion vessels are employed.
26. (New) The process of claim 25, wherein the operating conditions in at least one of the conversion vessels is different from the other conversion vessels.
27. (New) The process of claim 26, wherein the pH in at least one of the conversion vessels is different from the other conversion vessels.
28. (New) The process of claim 25, wherein an additive is added to at least one of the conversion vessels.
29. (New) The process of claim 25, wherein seeds are added to at least one of the conversion vessels.

30. (New) The process of claim 1 further comprising a feed preparation vessel wherein the suspension is prepared.
31. (New) The process of claim 30, wherein the liquid is water.
32. (New) The process of claim 30, wherein the liquid is an alcohol.
33. (New) The process of claim 30, wherein the liquid is a hydrocarbon such as toluene, hexane, white spirits, and gasoline.
34. (New) The process of claim 30, wherein at least one additive is added to the suspension.
35. (New) The process of claim 34, wherein the additive includes a rare earth metal, a transition metal, a noble metal, and alkali metal, or an alkaline earth metal.
36. (New) The process of claim 35, wherein the additive is an oxide, hydroxide, carbonate, or hydroxycarbonate.
37. (New) The process of claim 30, wherein the temperature in the one or more conversion vessels ranges from 150 to 375°C.
38. (New) The process of claim 1 wherein the solids to liquid ratio of the suspension entering the one or more conversion vessels ranges from 0.05:1 to 0.25:1.
39. (New) The process of claim 38, wherein the solids to liquid ratio of the suspension exiting the last of the one or more conversion vessels ranges from 0.03:1 to 0.22:1.

40. (New) The process of claim 1, wherein the solids content of the suspension entering the one or more conversion vessels deviates from the solids content of the suspension exiting the last of the one or more conversion vessels by less than 40 wt%.

41. (New) The process of claim 40, wherein the solids content of the suspension entering the one or more conversion vessels deviates from the solids content of the suspension exiting the last of the one or more conversion vessels by less than 20 wt%.

42. (New) The process of claim 41, wherein the solids content of the suspension entering the one or more conversion vessels deviates from the solids content of the suspension exiting the last of the one or more conversion vessels by less than 10 wt%.

43. (New) An apparatus for continuously converting a solid starting iron compound to a solid product iron compound comprising:

a feed preparation vessel wherein a suspension of the solid starting compound in a liquid is prepared;

one or more agitated conversion vessels operating under hydrothermal conditions to which the prepared suspension is continuously fed and wherein the solid starting iron compound is converted into a solid product iron compound having different physical, chemical, or structural properties from the solid starting iron compound; and

a cooling vessel wherein the solid product iron compound is cooled.

44. (New) The apparatus of claim 43, further comprising a mill wherein the solid product iron compound is ground.

45. (New) The apparatus of claim 43, further comprising a separation device for separating seeds.

46. (New) The apparatus of claim 45, further comprising a means for recycling seeds to the mill.
47. (New) The apparatus of claim 43, further comprising a means for adding seeds to at least one of the one or more conversion vessels.
48. (New) The apparatus of claim 43, further comprising a means for forming a shaped body comprising the solid product iron compound.
49. (New) The apparatus of claim 48, further comprising a means for calcining the shaped body.
50. (New) The apparatus of claim 49, wherein the shaped body is a catalyst for Fischer-Tropsch synthesis, Fluid Catalytic Cracking, Hydroprocessing, Hydrocracking, or Hydrogenation reactions.